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LCD – TFT 2.8” for REC BMS
User Manual

Features:

- robust and small design
- touch screen display
- low power consumption
- main parameters view tab + 4 sub-menu tab + settings-menu tab
- portrait/landscape view
- automatic/manual backlight setting
- hibernate timer
- reverse polarity supply voltage protection
- under and over-voltage protection
- aluminum enclosure
- one-year warranty

General description of the LCD touch display for REC BMS

Battery management system (BMS) is a device that monitors and controls each cell in the battery pack by measuring its parameters. Its job is to maintain the battery pack in the safe operating range, provided by the manufacturer. 2.8” LCD – TFT screen shows all the parameters of the electric/hybrid vehicle equipped with REC BMS.

LCD –TFT may be connected to the independent BMS unit (4-15 cells) or Master BMS unit – up to 225 cells. User can monitor the parameters in real-time and diagnose the potential errors in the system. LCD – TFT requires its own power supply (10-16 V). Reverse polarity, under-voltage and over-voltage protection is integrated in the power management circuit of the LCD –TFT. An ambient light sensor is added to automatically adapt backlight of the LCD and decrease power consumption. LCD – TFT is equipped with professional protection foil with spacer dots to cancel the light interference on the display.

User can define the communication cable length from 0.3 m to 6 m and choose between back or side cable exit.

Table 1: General parameter table.

Parameter	Value	Unit
Supply voltage	10 - 16	V
Supply current (10.0 V)	< 43	mA
Low voltage disconnect	9.8	V
Enclosure dimensions (w × l × h)	104 x 69 x 16	mm
Weight (6 m communication cable)	410	g

System overview:

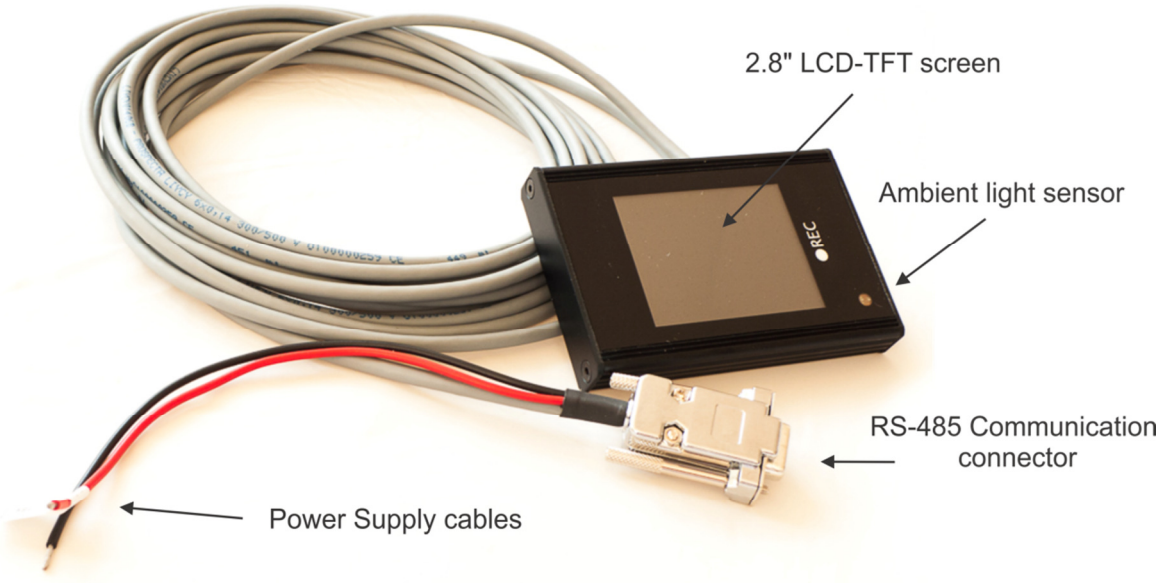

Figure 1: LCD –TFT overview.

Table 2: LCD-TFT tab description.

Icon	Tab	Description
	Main parameters	First tab shows main parameters of the battery powered system.
	Cell’s voltage	Second tab shows each cell’s voltage. User can sweep through slave units if present.
Ω	Cell’s impedance	Third tab shows each cell’s DC impedance. User can sweep through slave units if present.
	Cell’s temperature	Forth tab shows battery pack temperature. User can sweep through slave units if present.
	BMS temperature	Fifth tab shows each BMS temperature (passive balancing).
	LCD –TFT settings	Sixth display serves for LCD –TFT settings.

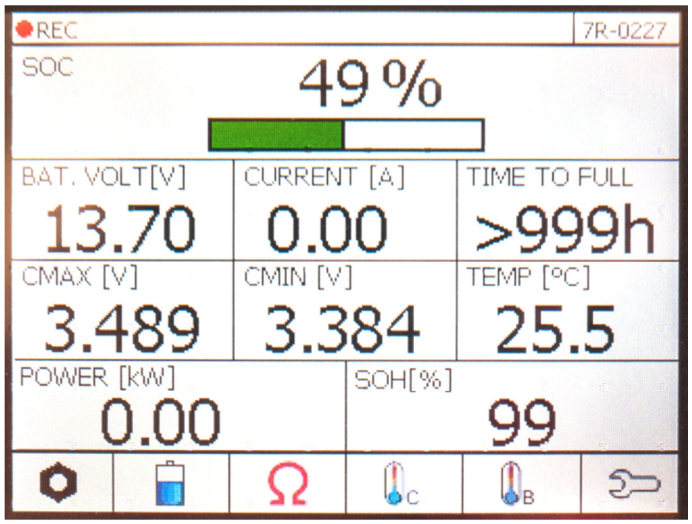

Figure 2: First tab - main parameters.

Table 3: First tab - main parameters overview.

Window	Description
SOC	State of charge of the battery pack
BAT. VOLT [V]	Battery pack voltage
CURRENT [A]	Battery pack current (positive when charging)
TIME TO FULL/EMPTY	Approximate time when the battery pack is full (charging) or empty (discharging)
CMAX [V]	Maximum cell’s voltage
CMIN [V]	Minimal cell’s voltage
TEMP [°C]	Maximal temperature
POWER [kW]	Battery pack power
SOH [%]	State of health

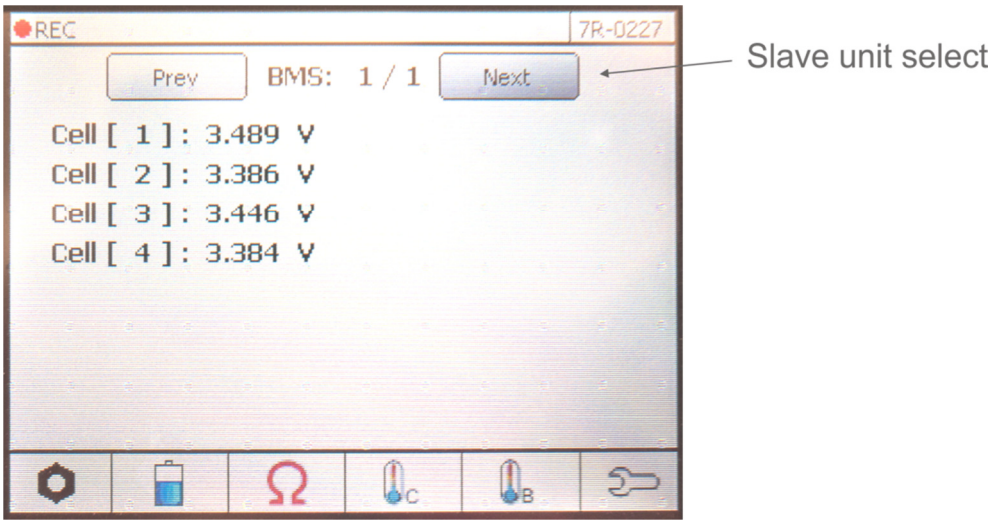

Figure 3: Second tab – cell’s voltages.

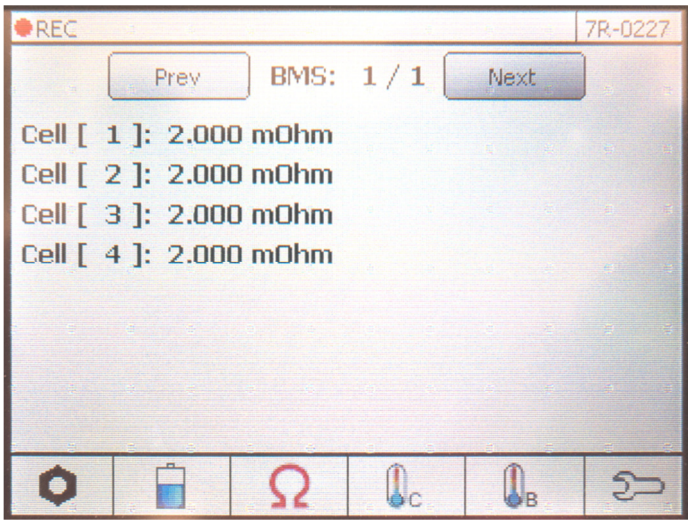

Figure 4: Third tab – cell’s DC impedance.

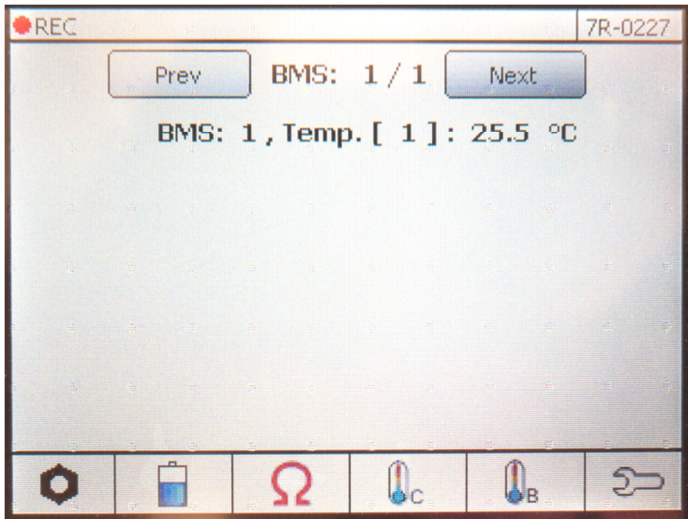

Figure 5: Fourth tab – cell’s temperatures.

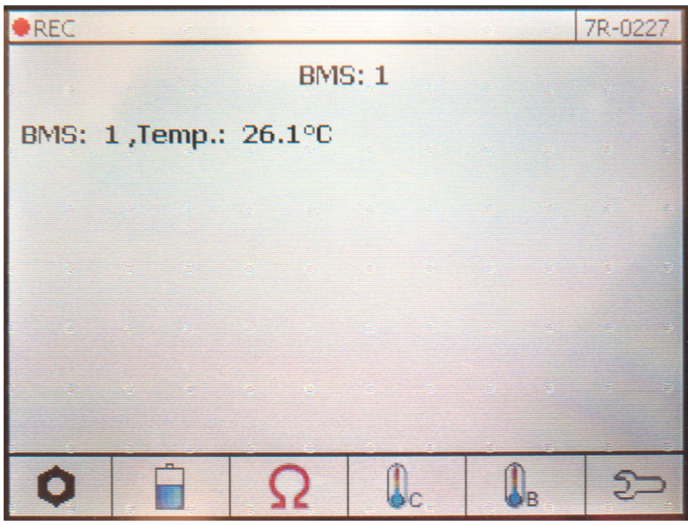

Figure 6: Fifth tab – BMS temperatures.

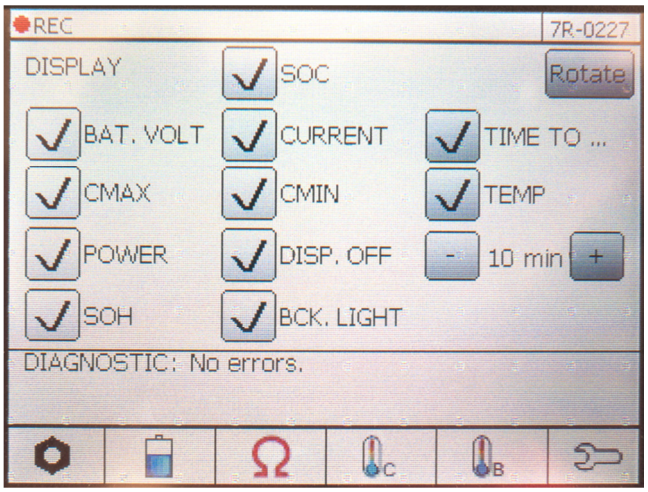

Figure 7: LCD –TFT settings.

Table 4: LCD –TFT settings buttons description.

Icon	Description
SOC	Show/Hide SOC from the main parameters’ tab
BAT. VOLT	Show/Hide battery pack voltage from the main parameters’ tab
CURRENT	Show/Hide battery pack current from the main parameters’ tab
TIME TO…	Show/Hide Time to full/empty from the main parameters’ tab
CMAX	Show/Hide CMAX from the main parameters’ tab
CMIN	Show/Hide CMIN from the main parameters’ tab
TEMP	Show/Hide highest temperature from the main parameters’ tab
POWER	Show/Hide power from the main parameters’ tab
SOH	Show/Hide SOH from the main parameters’ tab
DISP. OFF	Selects or turns-off backlight sleep mode timer.
BCK. LIGHT	Selects automatic or manual backlight settings.
Rotate	Rotates screen Portrait/Landscape.
DIAGNOSTIC	Describes the error in the system.

RS-485 Communication connector

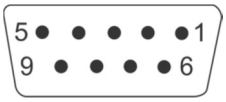

Figure 8: LCD –TFT RS-485 DB9 female connector front view.

Table 5: RS-485 DB-9 connections.

Pin	Designator
1	-
2	AGND
3	B
4	A
5	-
6	+3.4 V
7	-
8	-
9	-

LCD –TFT is providing 3.4 V for power supply of the galvanically isolated RS-485 driver.
Galvanic isolation up to 2.5 kV is provided. No additional termination resistors are required.

2.8” LCD-TFT connection instructions

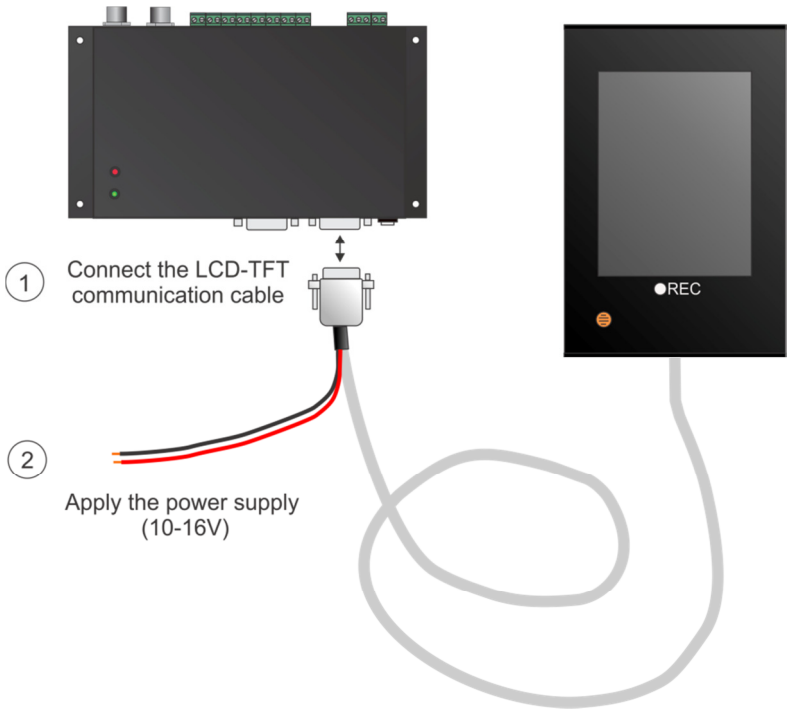

Figure 9: LCD –TFT connection to REC BMS 9R.

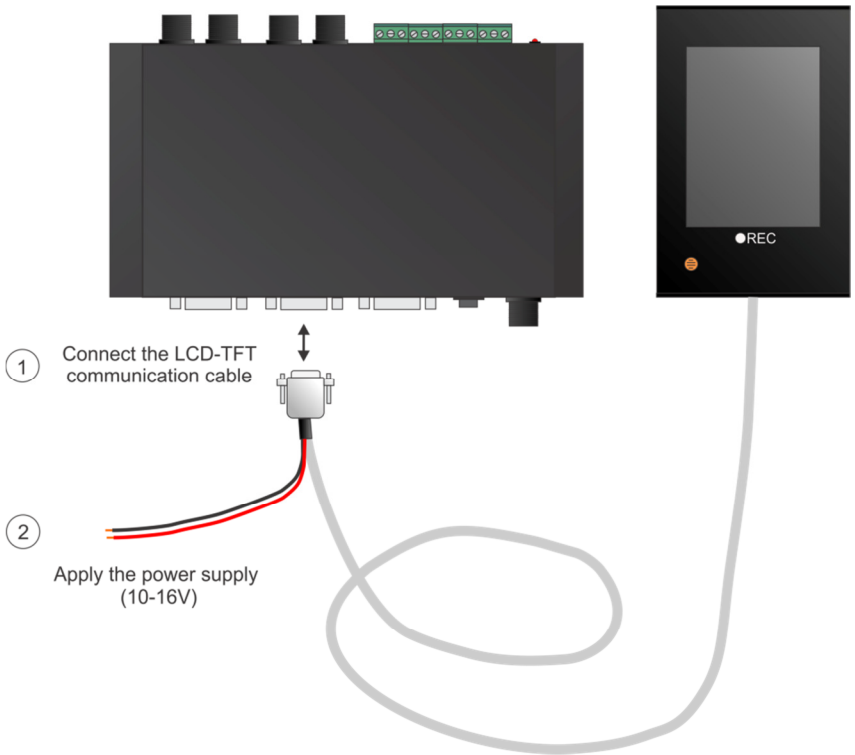

Figure 10: LCD –TFT connection to REC BMS Master Unit 9M.